

REMARKS

The Office Action dated September 30, 2003 has been received and carefully reviewed. In response, the claims have been amended to positively recite the novel elements of the present invention. Specifically, the present invention uses a first controller to move, align and light the photomask with respect to the substrate. This first controller then interacts with a second controller, which then applies vacuum pressure only in the area where the substrate is exposed to light. In addition to the new apparatus claims, several claims have been added disclosing the method of exposing a portion of a substrate to a light pattern. These remarks address the Examiner's previous rejections in view of the newly added and amended claims.

The Examiner rejects Claim 1 under 35 U.S.C. §102(b) as being clearly anticipated by Yabu, Shuichi (JP405067551A). The Examiner states that Yabu discloses an aligner comprising all of the structural elements recited claim 1, therefore concluding that the wafer chuck of Yabu is adapted to operate in the same manner as the present invention, as recited in Claim 1. In response to this rejection, Claim 1 has been canceled and replaced with Claim 9, which positively recites the novel elements of the present invention. The present invention uses a first controller to perform the movement and aligning of the mask with the substrate, and a second controller to control where the sucking unit applies vacuum pressure. This second controller interacts with the first controller so that vacuum is only applied in those areas being exposed. Yabu discloses a wafer chuck wherein wafers of different sizes can be held to the chuck via vacuum pressure. However, Yabu does not disclose how the regions where the vacuum is to be applied are controlled or determined. It simply discloses opening-and-closing means 13 and 14, which can be actuated to allow vacuum pressure to exist in their respective absorption fields 7 and 8. However, Yabu does not disclose an apparatus for controlling these opening-and-closing means. Furthermore, since the Yabu disclosure only describes the wafer chuck and does not describe the alignment apparatus, there is no reference or suggestion that the controller used to align the mask in any way interacts with these opening-and-closing means located on the wafer chuck.

The Examiner rejects Claim 1 under 35 U.S.C. §102(a) as being clearly anticipated by JP-2002012352A. This reference discloses a film substrate conveyor where the rectangular suction surface is sectioned into four portions, wherein vacuum pressure can be independently applied. However, like Yabu, this document does not disclose how these four portions are controlled; only stating that vacuum pressure can be independently applied. There is no reference or suggestion that the controller used to align the mask in any way interacts with the controller for these four vacuum portions.

The Examiner rejects claims 1,3-8 under 35 U.S.C. §102(e) as being anticipated by Dunn, et al., U.S. Patent No. 6,201,597. The Examiner states that Dunn et al. disclose an exposure apparatus for transferring a predetermined pattern formed on a photomask (14) onto a substrate (10) comprising all of the limitations of the instant claims. The Examiner further notes that this patent discloses a sucking unit having multiple zones (col. 7, lines 15-17) and that each zone can be independently activated (Figure 3). There are a number of other instances throughout the patent that reiterate these facts. The patent also outlines the steps needed to adjust the substrate as it is moved to each of its various position, including enabling and disabling vacuum pressure (col 7, lines 55-65). However, the patent does not disclose how the vacuum pressure unit is controlled. Again, the instant claims have been modified to positively recite the novel element of the instant invention, namely the use and interaction of two controllers; one for aligning, moving and lighting the photomask and the second, interacting with the first, for controlling the zones to which vacuum pressure is applied. Dunn, et al. does not disclose how the zones where vacuum pressure is to be applied are determined or controlled.

The Examiner rejects claim 1-3-8 under 35 U.S.C. §103(a) as being unpatentable over Taniguchi, U.S. Patent No. 5,721,608 in view of Yabu, Shuichi. The Examiner states that Taniguchi discloses an exposure apparatus comprising substantially all of the structure set forth in the instant claims, but admits that Taniguchi does not the sucking unit is capable of sucking in only a part of the substrate. The Examiner cites Yabu, Shuichi for its disclosure of an aligner and a sucking device “being capable of sucking the to-be-exposed substrate only at a part thereof”.

As stated above, Yabu does not disclose the device in the newly added claims, specifically there is no mention of a controller for the multiple vacuum zones. Therefore,

since Yabu does not disclose this element, the combination of Yabu and Taniguchi does not lead to the newly modified claims.

In addition to the newly added apparatus claims, there are also new method claims. None of the aforementioned references disclose a method of exposing a wafer, whereby only the part of the substrate exposed to light is held via vacuum pressure.

Reconsideration and allowance are respectfully requested in view of the foregoing.

Respectfully submitted,



Kevin S. Lemack

Reg. No. 32,579

176 E. Main Street – Suite 7

Westboro, Massachusetts 01581

TEL: (508) 898-1818